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Journal Name:	Physical Science International Journal
Manuscript Number:	Ms_PSIJ_31114
Title of the Manuscript:	The Galilean limit of Quantum Gravity: Corrections to the Newton's Law
Type of the Article	Original Research Article

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This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	The topic addressed by authors are interested, however, the paper requires major revision. 1-The organization of the paper is weak. Motivations are not clear enough. 2-A number of math typos, e.g. equations 1, 12, 27... 3-What is the physical meaning of equation 9? and accordingly equation 1 describes what? 4-How can we recover Einstein's GR from the following arguments? 5-where are exact quantum effects and quantum corrections in most of equations? I think an application of the present argument to Black Holes Physics is an advantage since quantum gravity arises. See: H. Lu et al, Black holes in higher-derivative gravity, Phys. Rev. Lett. 114, 171601 (2015) S.O. Alexeyev and M.V. Pomazanov, Phys. Rev. D55 (1997) 2110 [hep-th/9605106]; "Singular Regions in Black Hole Solutions in Higher Order Curvature Gravity," eprint gr-qc/9706066; R. A. El-Nabulsi, Wormholes in higher dimensions with non-linear curvature terms from quantum gravity corrections, J. Korean Phys. Soc. (Springer) 59, 2693 (2011) R. A. El-Nabulsi, Living with phantoms fields in a sheet space-time, General Relativity & Gravitation 42, 6, 1381 (2010) 6-Can we compare the present approach with those obtained in literature motivated from string, superstring,	The paper has been shortned (arXiv) so that is a little bit synthetic. Typos have been corrected and text has been added to make more clear the manuscript. Equation 1 describes the curvature of space given a wave function that describes the mass distribution motion into it and that evolves following the quantum law. Equation 9 is derived in the papers: 1. P. Chiarelli, The quantum lowest limit to the black hole mass derived by the quantization of Einstein equation, Phys. Sci. Int. J., 9(4) 1-25 (2016). ArXiv: 1504.07102 [quant-ph] (2015) And 2. P. Chiarelli, "The CPT-Ricci scalar curvature symmetry in quantum electro-gravity" Int.J. Sci. 5 36-58 (2016). All quantum effects (and corrections to classical gravity are introduced by the quantum pseudo-potential $V_{qu} = -\frac{\hbar^2}{m} \frac{1}{ \psi \sqrt{-g}} \partial^\mu \sqrt{-g} (g^{\mu\nu} \partial_\nu \psi).$ In the reference 1 the mass of the fundamental Black Hole state has been calculated for the Schwarzschild case. Moreover, the gravity of antimatter (that is introduced by quantum physics) can be also



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	loop quantum gravity and fractional relativity where higher-order derivatives occurred naturally see: A. Bartoli, J. Julve, E. J. S. Villasenor, Gauge fixing in higher derivative gravity, <i>Class. Quant. Grav.</i> 16 (1999) 2283–2298 T. Biswas, S. Talaganis, String-Inspired Infinite-Derivative Theories of Gravity: A Brief Overview, <i>Mod. Phys. Lett. A</i> 30 (03n04) (2015) B. S. DeWitt, G. Esposito, An Introduction to quantum gravity, <i>Int. J. Geom. Meth. Mod. Phys.</i> 5 (2008) 101–156 G. Calcagni, Geometry and field theory in multi-fractional spacetime, <i>JHEP</i> 01(2012)065 M. Arzano, G. Calcagni, D. Oriti, M. Scalisi, Fractional and noncommutative spacetimes, <i>Phys. Rev. D</i> 84, 1G. Calcagni, D. Oriti, and J. Thürigen, Dimensional flow in discrete quantum geometries, <i>Phys. Rev. D</i> 91, 084047 (2015)25002 (2011) R. A. El-Nabulsi, Higher-order geodesic equations from non-local Lagrangians and complex backward-forward derivative operators, <i>Ann. West Univ. Timis. Math. Comp.</i> 54, 139-157 (2016). R. A. El-Nabulsi, Non-standard fractional exponential Lagrangians, fractional geodesic equation, complex general relativity and discrete gravity, <i>Canadian Journal of Physics</i> 91(8), 618 (2013) 7-Is the present formalism connect to Bohm and Nottale approaches??	derived by the quantum gravity equations (see reference 17 in the manuscript that agree with outputs of reference 15-16) Moreover, as shown in: 3. P. Chiarelli, Theoretical derivation of the cosmological constant in the framework of quantum gravity: the solution of the vacuum catastrophe? <i>Galaxies</i>, 4, 6 (2016). The quantum effects that generate the corrections to the Newton law are directly connected to the cosmological constant effect on the motion of Galaxies. As far as it concerns the point 6- is object of current analysis https://www.researchgate.net/project/The-interplay-between-the-minimum-action-principle-and-the-quantum-gravity?esc . The hydrodynamic approach of quantum gravity leads to a cosmological term that is function of space-time co-ordinates (more general that a simple constant that inflates the vacuum and brings to the problem of very huge quantum vacuum energy). Thence the question is: can we thake the general relativity equation like given by the classical case (add to it a so called cosmological constant (on which the Einstein itself had great doubts)) and couple it to the quantum case? Or we should first define the exact quantum gravity equation and than coupled it to the quantum equations in cuirved space? (I prefer the last approach).
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		In the paper 3 a first comparison is made: The hydrodynamic approach to quantum gravity leads to equations that leads to the correct value of the cosmological constant I thanks for the useful references that I will read with great attention for further checks and theoretical comparisons..
<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments		